Workshop Comments
For Discussion Purposes Only

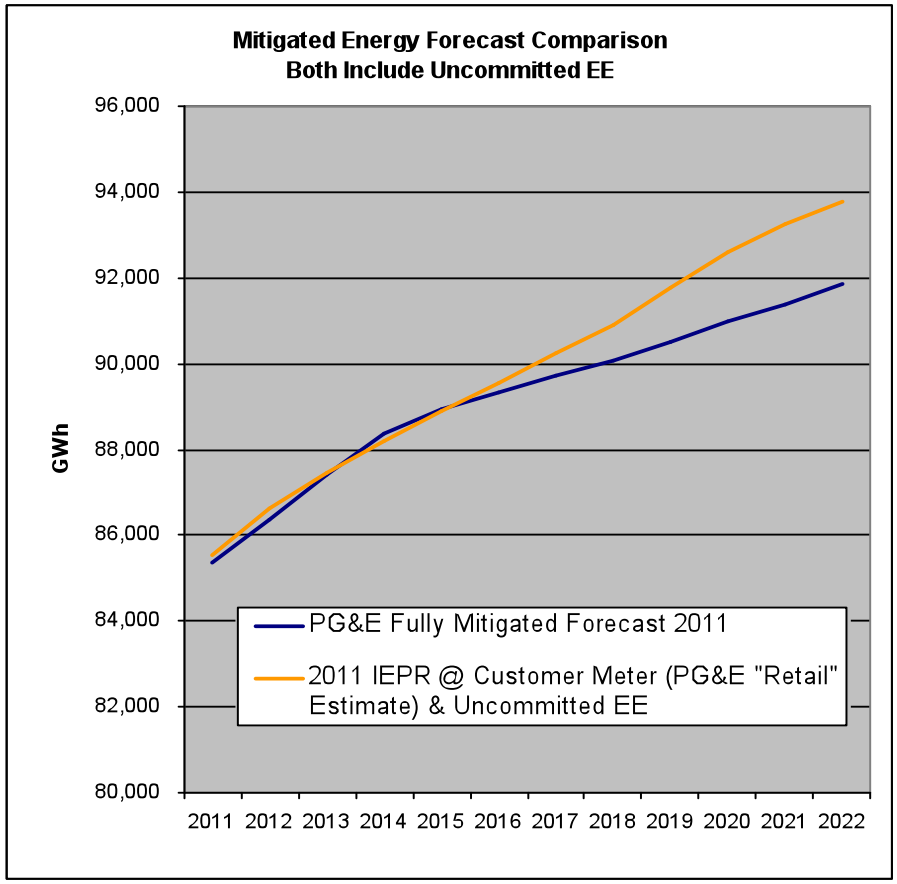
Draft California Energy Demand 2010-2012

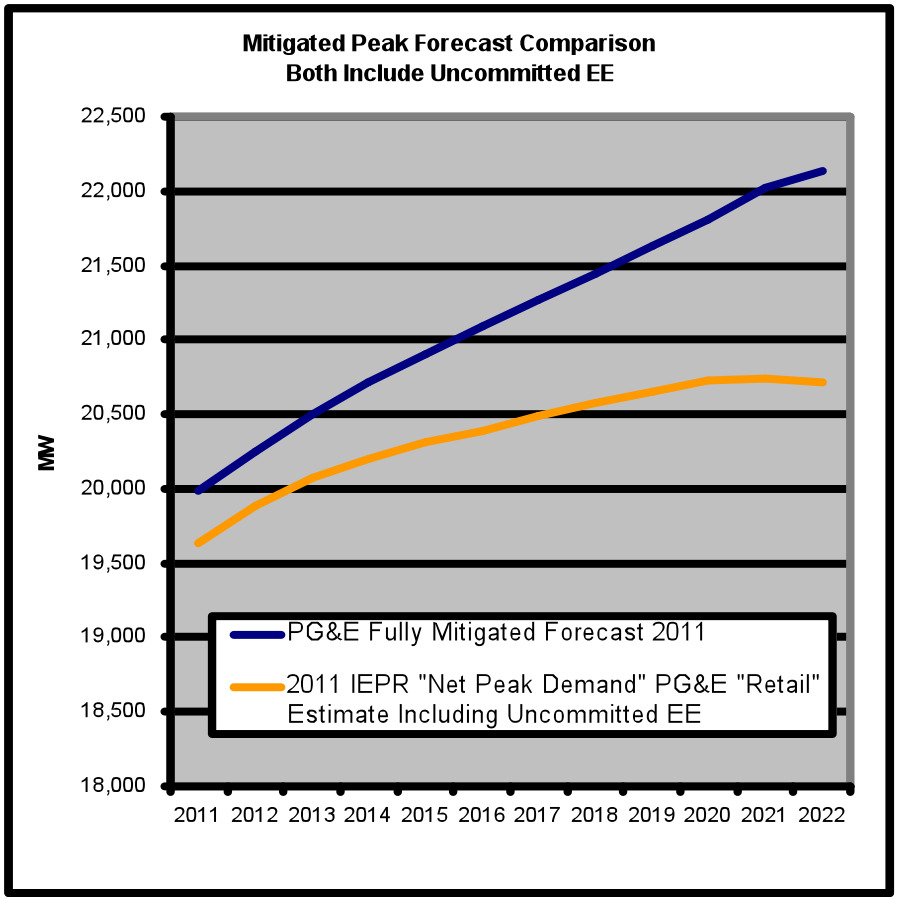
Aug 30, 2011

Observations and Questions

- Why does energy demand grow faster than peak demand in the draft forecast?
- How much total energy efficiency is being assumed in the draft projections?
  - Committed
  - Uncommitted
- Why is the peak/energy ratio on EE savings so high?
- What is the 95% confidence interval around these expected values for the forecasts?

"Retail" Peak and Energy Forecasts – PG&E vs. CEC Preliminary





Please Note: PG&E forecasts are fully mitigated for committed and uncommitted EE. For comparison purposes, PG&E has estimated CEC's fully mitigated forecast based on its forecast and uncommitted EE for PG&E Planning Area. It needs to be confirmed with CEC.

Historical and Forecast Growth Rates for Peak and Energy

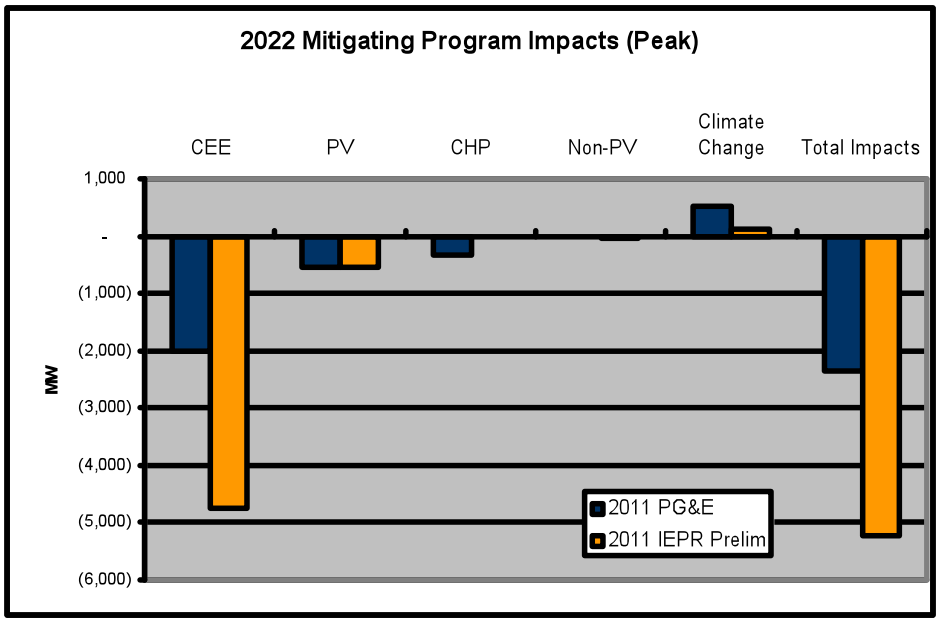
- On average, over the past 20 years, peak growth has exceeded energy growth by about 0.4%.
- Current PG&E forecast maintains this trend, with 0.7% energy growth and 0.9% peak growth (2011-2022)
- CEC staff forecast shows higher energy growth (1.3%) than peak (1.2%)

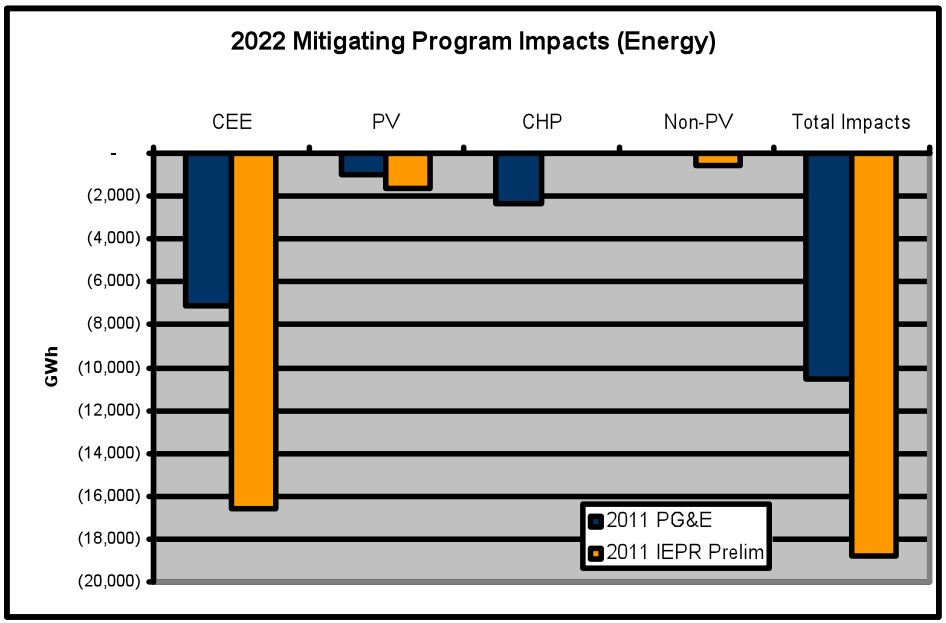
Question: Considering the historical trend, is the CEC forecast reasonable in suggesting that energy growth exceeds peak growth by about 0.1%?

Table 2-1: PG&E Planning Area Forecast Comparison

Consumption (GWh)				
	CED 2009 (Dec. 2009)	CED 2011 Preliminary-High	CED 2011 Preliminary-Mid	CED 2011 Preliminary-Low
1990	86,803	86,597	86,597	86,597
2000	101,333	100,969	100,969	100,969
2010	108,344	106,119	106,119	106,119
2011	109,703	107,914	107,369	106,489
2015	115,828	115,634	113,520	111,008
2020	122,414	126,352	120,669	118,820
2022	--	131,191	123,804	121,839
Average Annual Growth Rates				
1990-2000	1.56%	1.55%	1.55%	1.55%
2000-2010	0.67%	0.50%	0.50%	0.50%
2011-2015	1.37%	1.74%	1.40%	1.04%
2011-2020	1.23%	1.77%	1.31%	1.22%
2011-2022	--	1.79%	1.30%	1.23%
Peak (MW)				
	CED 2009 (Dec. 2009)	CED 2011 Preliminary-High	CED 2011 Preliminary-Mid	CED 2011 Preliminary-Low
1990	17,250	17,250	17,250	17,250
2000	20,628	20,628	20,628	20,628
2010	23,479	22,922	22,922	22,922
2011	23,810	23,236	23,151	22,973
2015	25,193	24,779	24,402	23,832
2020	26,877	26,887	25,831	25,334
2022	--	27,729	26,313	25,734
Average Annual Growth Rates				
1990-2000	1.80%	1.80%	1.80%	1.80%
2000-2010	1.30%	1.06%	1.06%	1.06%
2011-2015	1.42%	1.62%	1.32%	0.92%
2011-2020	1.36%	1.63%	1.22%	1.09%
2011-2022	--	1.62%	1.17%	1.04%
Historical values are shaded				

Mitigating Assumption Comparisons*





Including Uncommitted Energy Efficiency.

*IEPR Assumptions are for PG&E Planning Area.

Notable Differences:

PG&E does not include any impacts for Big Bold EE. (616 MW, 1049 GWh, 2022)

PG&E includes a larger impact for climate change. (399 MW, 2022)

PG&E Forecasts Input Assumptions

- Energy Efficiency:
  - 2000-2009: PG&E filed savings reports with CPUC, Energy Efficiency Groupware Application (EEGA)
  - 2010-2012: EEGA, Sep 2010 filing
  - 2013-2020: CEC savings estimates in the incremental Impacts of Energy Efficiency Report, excluding BBEES and savings decay make-up values
  - 2021-2022: Estimates based on an average of the uncommitted program savings for each category.
  - (BBEES impact in 2022 – 616MW, 1049 GWh)
- Distributed Generation:
  - PV (CSI) – 2009 IEPR
  - CHP – 2011 LTPP Scoping Memo with modest modification
- Electric Vehicle: 2009 IEPR

Incremental Committed EE in Mid-Case (2010-2022)

Table 2-3: PG&E Planning Area Standards Savings Estimates

Electricity Consumption Savings (GWH)							
	Residential			Commercial			
	Building Standards	Appliance Standards	Total	Building Standards	Appliance Standards	Total	Total Standards
1990	781	972	1,754	421	235	655	2,409
2000	1,595	3,104	4,699	959	703	1,662	6,361
2010	2,012	6,755	8,768	1,730	1,182	2,912	11,679
2015	2,315	8,869	11,184	2,420	1,587	4,007	15,191
2020	2,662	10,400	13,062	3,210	2,211	5,422	18,484
2022	2,762	10,618	13,380	3,525	2,331	5,855	19,235
Electricity Peak Demand Savings (MW)							
	Residential			Commercial			
	Building Standards	Appliance Standards	Total	Building Standards	Appliance Standards	Total	Total Standards
1990	190	236	426	74	41	115	541
2000	397	773	1,170	189	139	327	1,497
2010	505	1,695	2,200	332	227	559	2,759
2015	608	2,331	2,940	453	297	749	3,689
2020	692	2,704	3,396	600	413	1,013	4,409
2022	712	2,737	3,449	659	435	1,094	4,543

Source: California Energy Commission, 2011

Incremental Committed C&S = 7,556 GWh /1,784 MW

Incremental Committed Prog &Price = 3,797 GWh / 737 MW

Total Incremental Committed = 11,354 GWh / 2,521 MW

Incremental Uncommitted EE in Mid-Case (2013-2022)

Table 8-5: Projected Incremental Uncommitted Electricity Savings by Category and Planning Area, Mid Savings Scenario

		Energy Savings (GWh)				Peak Savings (MW)			
		State and Federal Standards	Programs	BBEES	Total	State and Federal Standards	Programs	BBEES	Total
PG&E	2013	0.46	416.47	68.38	485.31	0.21	96.42	38.19	134.82
	2015	42.80	1194.23	230.10	1467.12	15.56	281.80	130.33	427.69
	2020	392.76	2804.81	754.35	3951.92	199.10	699.86	439.30	1338.26
	2022	618.04	3557.92	1,049.33	5225.29	315.66	899.06	616.21	1830.93

Incremental Uncommitted = 5,225 GWh /1,831 MW

Total Incremental EE in Mid-Case (2010-2022)

Incremental Committed = 11,354 GWh / 2,521 MW

Incremental Uncommitted = 5,225 GWh /1,831 MW

Incremental Total = 16,579 GWh / 4,352 MW

Annual Average Incremental EE Mid-Case = 1,381 GWh / 363 MW

Annual Average of Adopted Goals (2010-2020) = 870 GWh / 248 MW

Annual Average of 2006-2008 EM&V = 840 GWh / 140 MW

Question:

Is it reasonable to expect annual average peak EE reductions of 363 MW per year for the next 12-years in light of the goals study and the recent EM&V studies?

Is it reasonable for the peak/energy ratio to increase by 50% from the committed period (2,521/11,354 = .26) to the uncommitted period (1,831/5,225 = .35) and 100% from the 2006-2008 EM&V results (140/840 = .17)?

Impacts of Climate Change

Table A-1: Projected Peak Impacts of Climate Change by Scenario and Planning Area

		Annual Maximum *Max631* (°F), Mid Demand Scenario	Annual Maximum *Max631* (°F), High Demand Scenario	Peak Impact, Mid Scenario (MW)	Peak Impact, High Scenario (MW)
LADWP	2011	101.5	101.5	--	--
	2015	101.9	102.0	19	24
	2020	102.5	102.8	45	59
	2022	102.8	103.1	56	74
PGE	2011	99.6	99.6	--	--
	2015	99.8	100.0	43	74
	2020	100.2	100.6	105	184
	2022	100.3	100.8	131	231

This is a good start on incorporating climate change into the energy demand forecasts.

PG&E believes the temperature statistic used here (Max 631) will systematically underestimate the impact of climate change because it does not directly include the minimum daily temperature in the calculation. PG&E suggests using CDD or a temperature statistic that directly incorporates minimum temperature.